www.clamer.eu

Useful Websites:

- www.clamer.eu
- www.marine.ie
- http://www.epa.ie/whatwedo/climate/
- http://www.heritagecouncil.ie/marine/
- www.mccip.org.uk
- http://met.ie
- http://www.c4i.ie/docs/Climate_Change.pdf

Recent publications

Environmental Protection Agency (2010). Extreme Weather, Climate and Natural Disasters in Ireland. 34 pp, ISBN: 978-1-84095-363.

Environmental Protection Agency (2010). The EPA and Climate Change: responsibilities, challenges, opportunities. Published by the Environmental Protection Agency. 20pp.

Heritage Council of Ireland (2009). Climate Change Heritage and Tourism – Implications for Ireland's coasts and inland waterways. 125pp. Published by the Heritage Council of Ireland. ISBN: 978-1-906304-06-5.

Marine Institute (2005). Climate Change: Implications for Ireland's Marine Environment and Resources, Marine Foresight Series, Published by the Marine Institute. 40pp. ISSN 1649-590X

Marine Institute (2010). Irish Ocean Climate and Ecosystem Status Report 2009. 97pp. Published by the Marine Institute. ISBN: 978-1-902895-40-6.

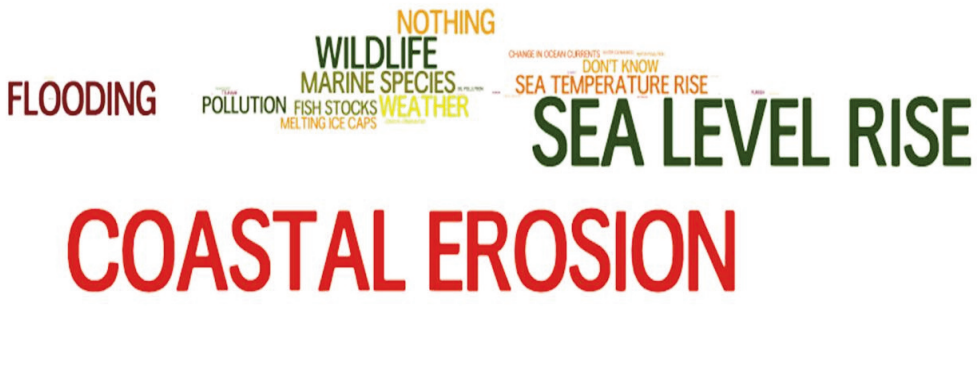
Marine Institute (2010). Ocean Acidification: An emerging Threat to our Marine Environment. 85pp. Published by the Marine Institute. ISSN: 1649-590-X.

Met Eireann (2008) Ireland in a Warmer World, Published by the Community Climate Change Consortium for Ireland (C4I). 109pp. ISBN: 9 780952 123255.

The extension of the CLAMER project to include respondents in the Republic of Ireland was co-sponsored by the Marine Institute, the Environment Protection Agency and the Heritage Council of Ireland

September 2011

Irish and European Attitudes to Marine Climate Change



Introduction:

Image courtesy of CLAMER Website ©

Rising sea levels, coastal erosion, flooding and changes in the frequency of extreme weather events are the top public concerns regarding climate change impacts on the marine environment. European citizens are concerned about the impacts of climate change on the marine and coastal environments, are reasonably well informed and are willing to take appropriate action. Many European citizens are already taking personal actions to reduce greenhouse gas emissions, but are concerned that individual actions are of little consequence given the scale of the problem. Citizens also tend to blame climate change on other groups of people or nations and assign governments and industry with responsibility for solutions. These are among the main messages emerging from the first ever European poll of public attitudes to marine climate change impacts, the results of which were presented at a major Marine Climate Change Conference in Brussels on 15th September 2011.

This brochure summarises the results of the recent EU-funded CLAMER Survey on public awareness of climate change impacts on marine and coastal environments. In identifying specific Irish concerns, and comparing them with corresponding European views, we can learn a lot about Irish perspectives, awareness and concerns. This in turn can guide the regulatory authorities and research community in communicating more effectively with the public about coping with climate change.

"We are all, to some extent, suffering from global warming and climate change fatigue. However, like death and taxes, it seems there is no escape from the weather changes that are coming down the track, and scientists here are now turning their attention to try to predict how exactly climate change will impact on Ireland, and its regions"
M-C Mousseau, What is Ireland's Climate Future.
Science Spin (Sept 2009).

Image courtesy of OPW © 2004 DCMNR

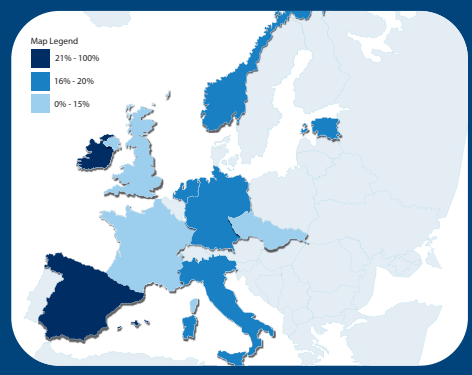


Figure 1. Level of concern regarding climate change impacts

General Perspectives

Of the 10 countries surveyed (Figure 1) Irish (21%) and Spain (21%) respondents expressed the greatest concern about climate change impacts, while France (15%), the UK (13%) and the Czech Republic (12%) expressed the least concern.

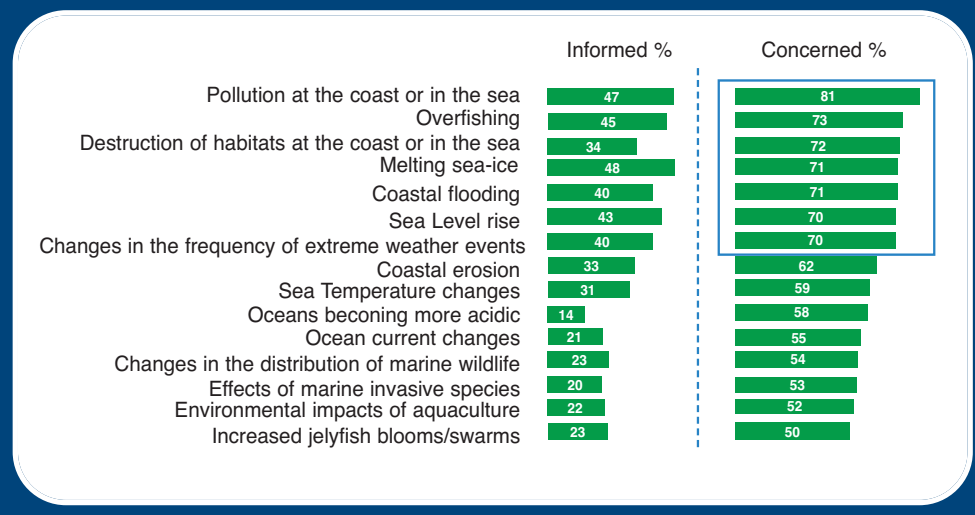


Figure 2. Which marine issues do you feel most informed about? How concerned are you about them?

When asked to comment on a list of 15 environmental issues related to the coasts or seas (Figure 2), respondents from all 10 countries said they had an understanding of, and were most concerned about, coastal pollution, over-fishing and melting sea ice. In last place, only 14% said they were informed about acidification of the oceans; however, 58% expressed concern about that issue.

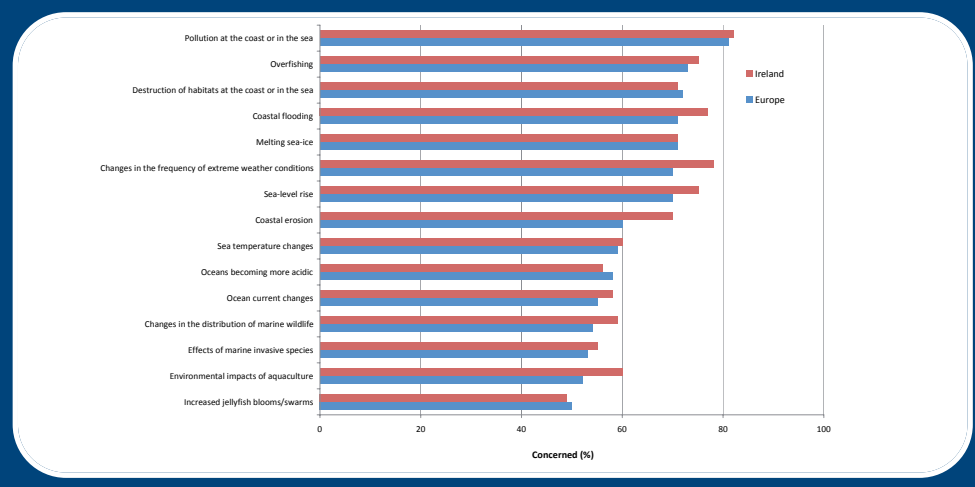


Figure 3. To what **extent** do you feel concerned about each of the following?

Excluding marine pollution, overfishing and the environmental impacts of aquaculture, which are not strictly speaking directly related to climate change, the areas where Irish concerns are above the European average are: coastal erosion (+10%); changes in the frequency of extreme weather events(+8%); coastal flooding (+6%); sea-level rise (+5%); changes in the distribution of wildlife (+5%); changes in ocean currents (+3%) and invasive species (+2%) (Figure 3).

Concerns by Country

The top 3 concerns by country are shown in Table 1, with all respondents identifying marine pollution as their greatest concern. The greatest Irish concerns were marine pollution (82%), in common with all other respondents, followed by changes in the frequency of extreme weather events (78%) and coastal flooding (77%). For the 15 parameters identified, the Italians would appear to be the most concerned generally, with the the Norwegians being the least concerned.

%	CZ	NO	EE	UK	NL	DE	FR	IT	ES	IE
Pollution at the coast or in the sea	79	67	83	80	69	80	83	85	84	82
Overfishing	67	60			59	74		77	76	
Destruction of habitats at the coast or in the sea			72			77		78	76	
Melting sea-ice	66					74	71	77	76	
Coastal flooding				74	61				73	77
Sea level rise					61				76	
Changes in the frequency of extreme weather events		55	69			74	72			78
Coastal erosion				71						

First
Second
Third

Table 1. Top Three Concerns by Country

Causes of Climate Change

88% of European and 86% of Irish respondents believe climate change is caused entirely, mainly or in part by human activities. Only 8% (12% of Irish) thought it was mainly or entirely caused by natural processes. This is much lower than in the United States where typically 32% to 36% believe that climate change is mainly or entirely caused by natural processes.

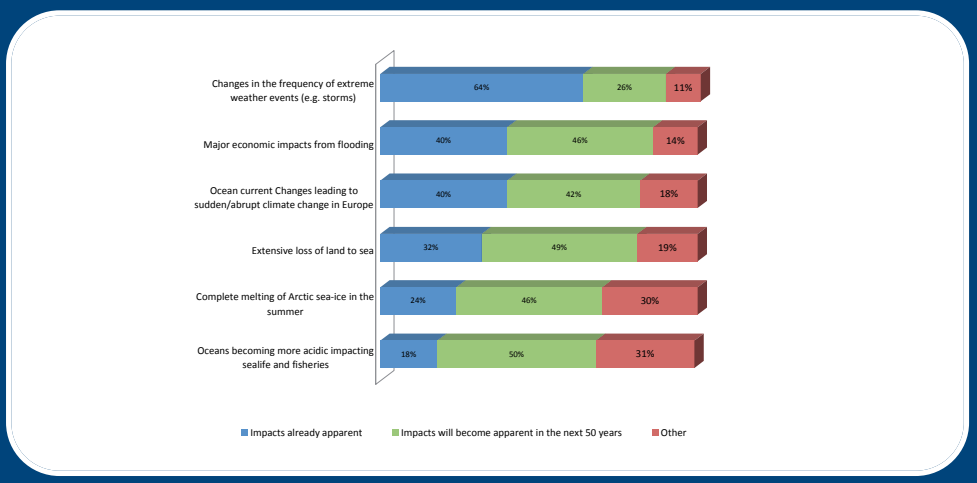


Figure 4. When do you think the following impacts of climate change on the coastline and seas of Europe will become apparent? (Data for Ireland)

When will the impacts of climate change be felt? When asked to indicate, from a list of 6 parameters (Figure 4), over what time scale climate change impacts would become apparent, both Irish and European respondents felt that impacts were already apparent. With the exception of ocean acidification (-3%) and sea-ice melt (-2%), Irish responses were above the European average for changes in the frequency of extreme weather events (+7%), the economic impacts of coastal flooding (+8%), abrupt changes in ocean currents (+13%) and the extensive loss of land to the sea (+2%).

Sources of information

The main source of information on climate change is television, both in Ireland (80%) and Europe as a whole (82%) (Figure 5). Interestingly, a higher percentage of Irish respondents (48%) listed radio as a source of information when compared to the European average (36%). Only the Estonians use the radio on a more regular basis (58%). Respondents from Ireland and the UK (20%) obtain a relatively high percentage of information on marine climate change issues from government reports when compared to the European average (11%).

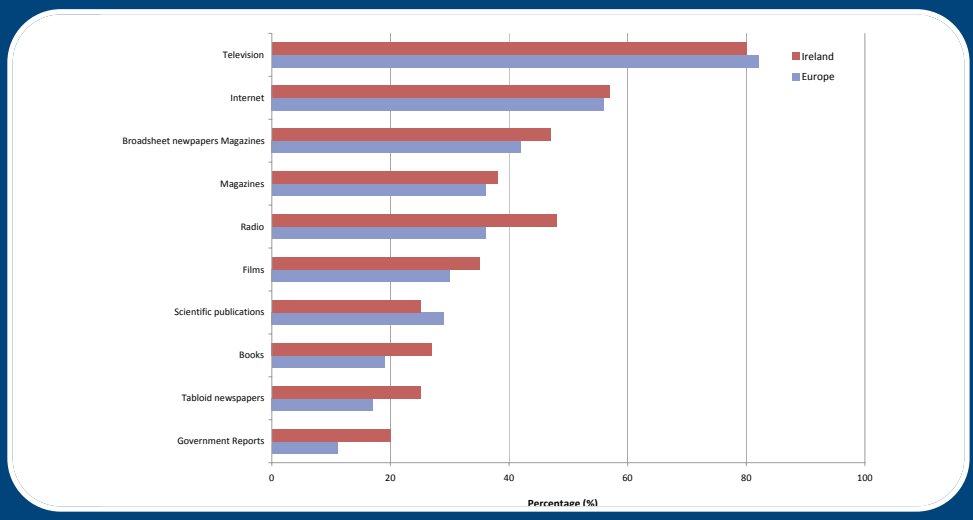


Figure 5. Where do you get information about climate change impacts on coastlines or the sea?

Trust (Figure 6) is highest in scientific publications, both amongst Irish (84%) and European respondents (83%) and there is a relatively good degree of trust in the information received from common sources such as broadsheet newspapers, books, television and radio. With regard to trust in individuals and organisations, scientists working for universities and environmental NGO's are the most trusted sources of information.

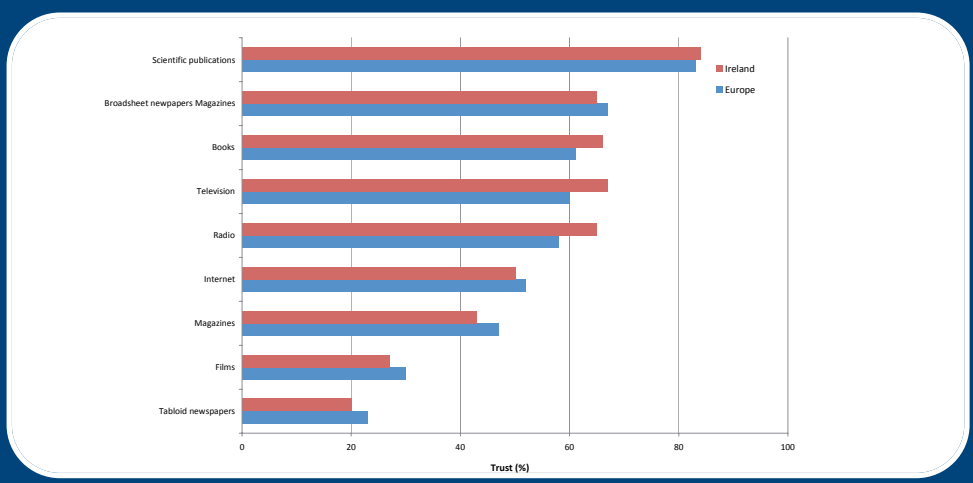


Figure 6. Trust in the media providing information about climate change impacts on the coastline or the sea?

In comparison to their European counterparts, Norwegian (52%), Irish (52%) and Italian (52%) respondents have a greater degree of trust in scientists working for government organisations than their European counterparts (European average: 44%).

What can we do?

Reducing energy use in the home; using energy from sustainable sources and environmentally friendly transportation (Figure 7) were identified by European citizens as the three most effective actions to reduce the impacts of climate change. Whilst both Irish and Europe citizens placed energy reduction and sustainability at the top of the list, the Irish third choice was buying environmentally friendly products, followed closely by reducing water use at home.

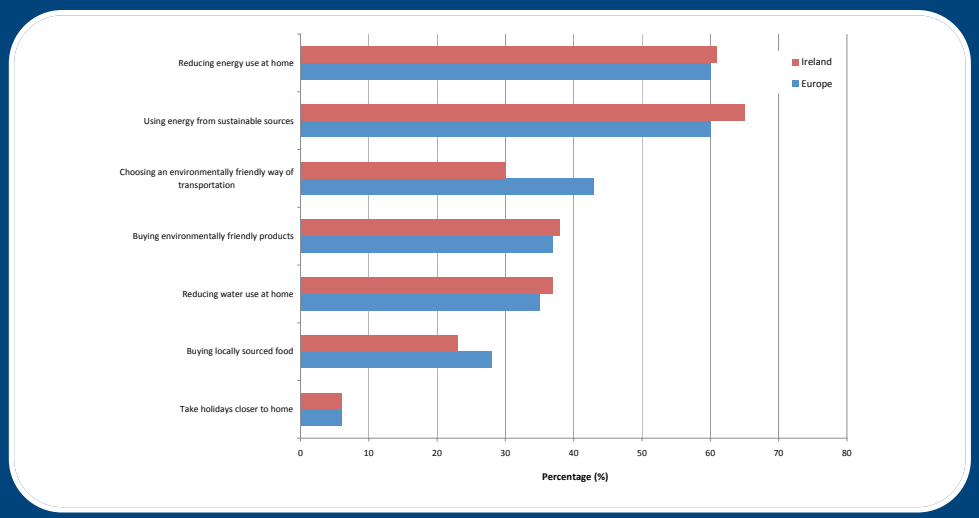


Figure 7. Most effective actions individuals should take to reduce and cope with the impacts of climate change

In terms of what people actually do to combat the effects of climate change, 'reducing energy use at home', 'reducing water use at home' and 'buying environmentally friendly products' fared the best amongst both Irish and European citizens (Figure 8).

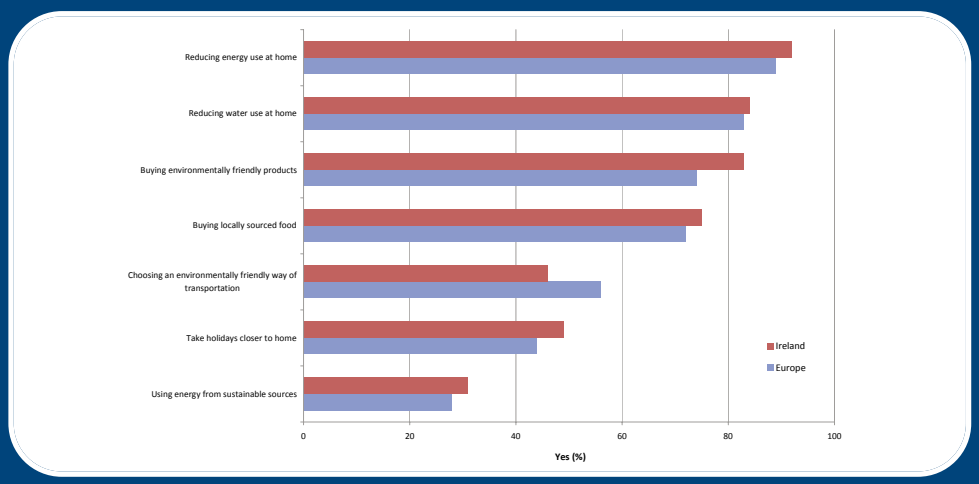


Figure 8. What actions have you taken to reduce and cope with the impacts of climate change?

Policy solutions

When asked what policy solutions were appropriate at European and national levels there was good correspondence between Irish respondents and their European counterparts for the top two choices, international commitments to greenhouse gas reductions and developing technologies to remove CO_2 from the atmosphere (Figure 9). In third and fourth place for Irish respondents came improving coastal defences and increasing the amount of energy from renewable sources.

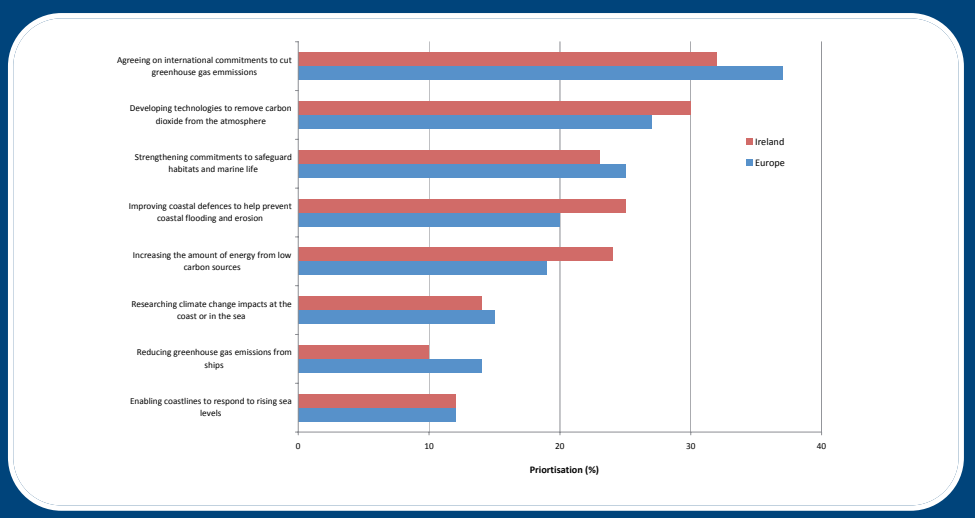


Figure 9. If you had to decide what climate change or marine policies should be prioritised by the European Union, which three would you select from the list above?

General Conclusions

The CLAMER survey confirmed that European citizens are concerned about the impacts of climate change on the marine and coastal environments, are reasonably well informed and are willing to take appropriate action. It also illustrated that there is a strong correlation between how informed respondents perceive themselves to be and how concerned they are (Figure 2).

However, even where there are tangible and fairly immediate local implications, many people still find it hard to make a personal connection with marine climate change impacts in the seas and ocean.

Specific Irish concerns agree very well with their European counterparts, being slightly higher for coastal erosion (+8%); changes in the frequency of extreme weather events (+8%) and coastal flooding (+6%). The high level of Irish concern relating to these matters may be related to the extreme weather events of recent winters as well as the various well-documented extreme weather events that have recently taken place around the world.

Whereas the physical impacts of climate change are both of concern and known, the more subtle impacts of climate change on biological systems appear to be less well appreciated. These include changes in species distribution (biogeography), growth and reproduction (phenology) and have major implications for the fisheries and aquaculture sectors. A lower level of public appreciation was found for other issues such as the introduction of invasive (alien) species and ocean acidification, which are identified as serious concerns amongst the scientific community.

Although there can be no certainty regarding the precise nature and rate of change to Ireland's marine environment due to alterations in climate, in the absence of policies and measures to prepare for and accommodate the changes, even the more moderate of the predicted scenarios would have major social and economic impacts.

(Marine Institute, 2005).

Climate change may bring opportunities?

While we tend to focus on the negative impacts of climate change, there are some positive aspects. This is not, however, to suggest that we should relent in our battle to combat climate change through mitigation measures (e.g. greenhouse gases).

With advance notice (e.g. future scenarios, predictive models, risk assessment) and appropriate planning, we can reduce the more extreme impacts (e.g. coastal flooding and erosion) and turn others into opportunities such as:

- *Ireland will present a more attractive destination to visitors in contrast to the increasingly hot and arid summers in Mediterranean;*
- *Coastal recreational activities have the potential to increase e.g. whale watching, surfing, birdwatching, kayaking due to warmer (not sunnier) temperatures;*
- *The predictions for warmer autumns means the tourism season has the potential to be prolonged beyond the summer months.*
- *Changing sea temperatures may result in the movement of new fish species into Irish fishing waters as well as present new opportunities for aquaculture.*

Image courtesy of Dublin City Council ©

General Conclusions (Continued)

It is clearly not always easy to separate general marine environmental impacts (e.g. marine pollution, overfishing, etc), from the great normal variability in weather patterns and interactions between other forcing factors and climate change impacts. These are issues that need to be better explained to the public. For example, a rise in sea-level may not pose a problem in one location, but if combined with a greater frequency of extreme weather events, waves could regularly overflow sea-walls resulting in coastal flooding.

Respondents' estimates of sea level rise and temperature change were generally in accord with scientific forecasts, which suggests that some fundamental messages are reaching the public:

- 38% of Irish citizens believe that, over the next 100 years, sea levels will increase by between 10cm and 100cm. This agrees well with the recent projections from Met Eireann and the Intergovernmental Panel on Climate Change. The CLAMER scientific synthesis report (2011) indicates that new studies estimate that sea levels could rise by anything up to 2m by 2100 in certain locations.

- Regarding the level of sea temperature changes over the next 100 years, 45% of Irish respondents believe that the sea temperatures will rise by 0.5°C to less than 2°C. A further 22% believe it will rise by 2°C to less than 5°C. General scientific consensus suggests that the seas around Ireland and the UK will be 1.5 to 4°C warmer by the end of the 21st century

Interestingly:

- 55% of Europeans and 58% of Irish respondents are concerned about changes in ocean current circulation leading to sudden large scale changes in marine ecosystems. Although there is great natural variability in circulation patterns, for example, decreases in circulation strength have been observed and there is historical evidence of large scale abrupt changes over the past 120,000 years, there is no evidence to suggest that major changes are occurring. Contrary to the scientific evidence however, 27% of European and 40% of Irish respondents believe that such change are already apparent.

- Rubbish and litter are perceived as particularly important issues in the Czech Republic, Estonia and Ireland.

- Italian respondents, the most southerly of the 10 countries surveyed, expressed the most concern about melting Arctic sea ice, while Norway, the most northerly, voiced the least concern.

Television, the internet, broadsheet newspapers and, in the case of Ireland, radio, are major communication channels, and Irish government agencies can take some comfort from the fact that the Irish public gets more information from government reports than its European counterparts and that the Irish have a higher degree of trust in government scientists than their European counterparts.

In conclusion, this brochure can only present a brief overview of the results of the CLAMER Survey. The full data collected is presented in the official CLAMER Project Report and the raw data collected will provide a wealth of material for future environmental and socio-economic studies

The CLAMER project has given us a valuable opportunity to survey Irish attitudes to climate change and the marine environment. It is important that these results are put to constructive use by the regulatory authorities and other agencies and organisations who seek to inform and shape public attitudes and behaviour in mitigating and adapting to climate change.

Full details on the CLAMER project and its deliverables are available at www.clamer.eu/

Background to the CLAMER project

The **Climate Change and Marine Ecosystem Research Project (CLAMER)** is an EU FP7 funded initiative to determine what European citizens know and care about in relation to climate change impacts on the marine environment. The project involves 17 institutions from 10 European countries and has 4 main deliverables:

1. To summarise existing scientific information on the impacts of climate change on the marine environment;
2. To investigate public awareness of marine climate change impacts;
3. To host an international conference on marine climate change impacts;
4. To produce a documentary film on climate change – Living with a '*Warming Ocean*'.

This brochure relates to Deliverable 2: the investigation of public awareness, perception and concerns regarding the impact of climate change on the marine and coastal environment.

Countries Surveyed

1. Norway
2. Netherlands
3. United Kingdom
4. Germany
5. Estonia
6. France
7. Ireland
8. Czech Republic
9. Spain
10. Italy

Figure 10. Countries Surveyed

Survey Methodology

To assess public awareness, perception and concerns, a commercial polling organisation (TNS), with significant previous experience of pan-European polling on climate change issues, was contracted to undertake a polling survey. The survey was carried out in January 2011 and involved 1,000 interviewees in each of the 10 countries listed above. The survey also took into account key socio-demographic features such as gender and age.

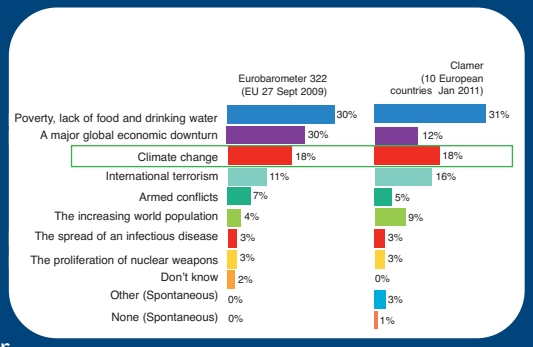


Figure 11. Comparison of CLAMER survey (2011) with EURO Barometer survey (2009) on global issues.

Validation

When asked about general perceptions of major global risks as a whole (Figure 11) , the percentage of respondents saying climate change is the most serious problem facing the world is the same for the CLAMER study of 10 European countries as a previous large scale study conducted amongst all 27 EU countries in 2009. This suggests that the 10 countries sampled would appear to be representative of Europe as a whole and that, in general, concern about climate change as a major global issue hasn't diminished

Note: *It is not uncommon in polling surveys for respondents to over-claim both their level of knowledge and concern. In general, males tend to claim they are more informed, whereas females, are more concerned. It is also a fact that the structure of a question influences the answer. This is true for most types of opinion surveys.*

What is Ireland doing?

Developing Ireland's response to climate change

Ireland's National Reform Programme *(April 2011) identifies national targets in each of five headline areas and is Ireland's response to the* ***Europe 2020 Strategy*** *(2010) which seeks smart, sustainable and inclusive economic growth, employment and innovation. One of Ireland's headline areas is Climate Change.*

Ireland's Headline Target*: Reduce greenhouse gas emissions in the non-traded sector by 20% compared to 2005 levels; increase the share of renewables in final energy consumption to 16% by 2020; move towards a 20% increase in energy efficiency. To achieve these headline targets, the Irish Government is committed to the publication of climate legislation to give certainty and clarity in relation to the reduction in greenhouse gas emissions to be achieved in line with EU targets. In progressing this commitment, a transparent process will be pursued which will provide an avenue for engagement by all the relevant stakeholders.*

The Government is committed to:

- *publishing a Climate Change Bill which will provide certainty surrounding government policy and provide a clear pathway for emissions reductions, in line with negotiated EU 2020 targets;*
- *legislating to give the relevant line Ministers temporary powers to take charge of State's actions in response to natural disasters, under the aegis of the National Emergency Response Action Committee;*
- *further improving energy efficiency for new buildings, with a view to moving towards zero carbon homes in the longer term;*
- *ensuring that all new commercial buildings are required to significantly reduce their carbon footprint..*

Responding to extreme weather, coastal flood and erosion events

The EU Floods Directive (2007) requires Member States to carry out a preliminary flood risk assessment by 2011 to identify the river basins and associated coastal areas at risk of flooding. For such zones or areas of particular significant risk, more detailed studies will be undertaken and flood risk maps will be drawn up by end of 2013. Flood risk management plans (focused on prevention, protection and preparedness) will be completed by end of 2015. The Directive applies to inland waters as well as all coastal waters across the whole territory of the EU.

To support the delivery of the various outputs under the Floods Directive, the Office of Public Works (OPW) has initiated a national programme of Catchment Flood Risk Assessment and Management (CFRAM) studies to deliver the required Flood Hazard and Risk Mapping and Flood Risk Management Plans (FRMPs).

In addition to this the OPW are concluding the Irish Coastal Protection Strategy Study which is producing strategic level coastal flood and erosion hazard mapping for the national coastline. These current scenario outputs have already been published for the east and south coast of Ireland and those for the south west, west and north west coasts are scheduled for completion in 2011 (flood maps) and 2012 (erosion maps). Further coastal flood hazard maps incorporating future scenarios (associated with climate change) are also being prepared and are expected to be published by end of 2011 for the east and south coast.

These maps and FRMPs will be of significant assistance to local authorities, planning authorities, the emergency services and the general public in addressing flood and erosion hazards and their potential social, economic and environmental impacts.

For further information see:

- *www.opw.ie/en/FloodRiskManagement/Publications/;*
- *www.engineersireland.ie/sector_papers/20110530-coastal.pdf;*
- *www.cfram.ie/cfram/;*
- *www.iae.ie/publications/*